Philips Medical Systems

FIELD CHANGE ORDER — Service

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service recommendation

OPTIMUS 50 / 65 / 80 RAD - R/F - C

APPLIES TO:

All OPTIMUS 50/65/80 RAD - R/F - C

TITLE:

Error combination 02WK + 02HG + 02HH + 00XO

LIST OF PAGES & DRAWINGS:

1...5 (00.0)

INTRODUCTION:

Symptom : Error 02WK in combination with 02HG + 02HH + 00XO, blank exposures

Cause : Malfunction of relay contact on PCB CU EZ139, explanation see PROCEDURE

Remedy : Exchange of PCB CU EZ139 if relay malfunction confirmed by measuring procedure

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MANPOWER / TIME TO COMPLETE:

1 engineer 0.5 hour checking
1.5 additional hours if CU replacement and programming required

TOOLS & TEST EQUIPMENT:

- Standard tool set
- Service PC, XRGSCOPE and Hardware Key

MODIFICATION KIT / PARTS REQUIRED:

For all generators mentioned under APPLIES TO, the following parts can be ordered at SL Hamburg.

PCB CU EZ139
release 2 generators (9-pin Sub-D connector) 4512 108 09023
release 3 generators (25-pin Sub-D connector) 4512 108 09202

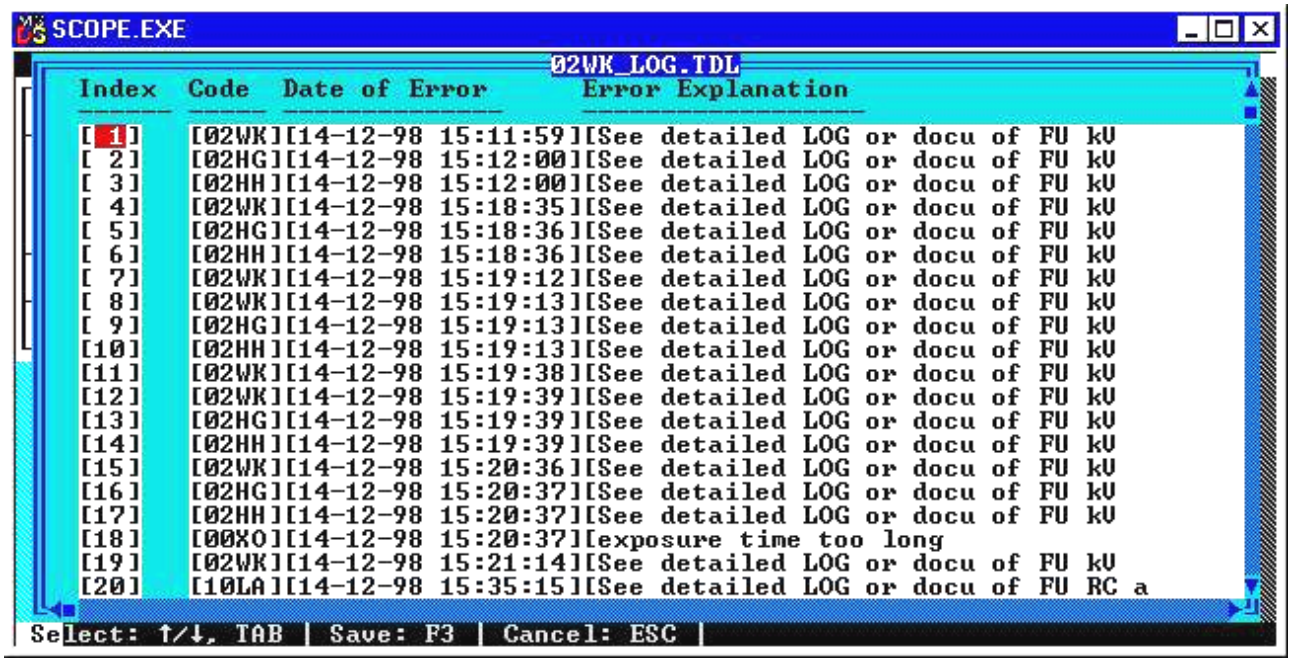
PROCEDURE:

PREPARATION of FLUOROSCOPY requests released
- via the control desk handswitch (RAD + R/F)
- via a release decade adaptation unit 1WA, 2WA, 1WB (RAD + R/F)
- via the signal bus (C)

cause a high-low transition of EN_X/ of the external signal bus.

This signal energizes a relay on PCB CU EZ139.
The FLUORO or PREP command will be confirmed via a CAN message. If valid CU sends a low-active signal EN_X_C/ via the relay contact to the generator units on the internal signal bus.

kV_control requires two hardware signals to get the converter active, one of the signals is EN_X_C/.
In case of a relay malfunction there will be no kV with exposure command. Error codes 02WK, 02HG, 02HH and 00XO might appear in different combinations, see following XRGSCOPE screen:
XRGSCOPE >> Faultfind >> Logging Table >> Error Log >> Error Log Index


SCOPE.EXE
02WK_LOG.TDL
Index Code Date of Error Error Explanation
[1] [02WK][14-12-98 15:11:59][See detailed LOG or docu of FU kV
[2] [02HG][14-12-98 15:12:00][See detailed LOG or docu of FU kV
[3] [02HH][14-12-98 15:12:00][See detailed LOG or docu of FU kV
[4] [02WK][14-12-98 15:18:35][See detailed LOG or docu of FU kV
[5] [02HG][14-12-98 15:18:36][See detailed LOG or docu of FU kV
[6] [02HH][14-12-98 15:18:36][See detailed LOG or docu of FU kV
[7] [02WK][14-12-98 15:19:12][See detailed LOG or docu of FU kV
[8] [02WK][14-12-98 15:19:13][See detailed LOG or docu of FU kV
[9] [02HG][14-12-98 15:19:13][See detailed LOG or docu of FU kV
[10] [02HH][14-12-98 15:19:13][See detailed LOG or docu of FU kV
[11] [02WK][14-12-98 15:19:38][See detailed LOG or docu of FU kV
[12] [02WK][14-12-98 15:19:39][See detailed LOG or docu of FU kV
[13] [02HG][14-12-98 15:19:39][See detailed LOG or docu of FU kV
[14] [02HH][14-12-98 15:19:39][See detailed LOG or docu of FU kV
[15] [02WK][14-12-98 15:20:36][See detailed LOG or docu of FU kV
[16] [02HG][14-12-98 15:20:37][See detailed LOG or docu of FU kV
[17] [02HH][14-12-98 15:20:37][See detailed LOG or docu of FU kV
[18] [00XO][14-12-98 15:20:37][exposure time too long
[19] [02WK][14-12-98 15:21:14][See detailed LOG or docu of FU kV
[20] [10LA][14-12-98 15:35:15][See detailed LOG or docu of FU RC a
Select: ↑/↓, TAB | Save: F3 | Cancel: ESC

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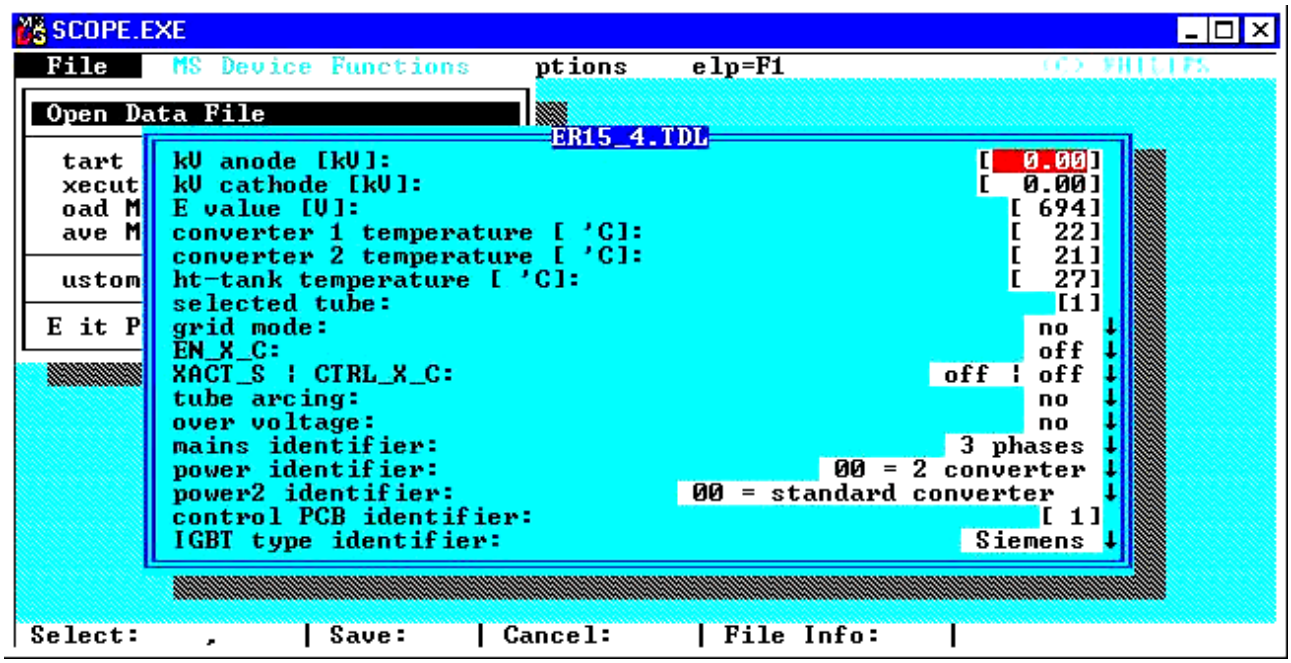
Error 15 was taken to check the signal details:
XRGSCOPE >> Faultfind >> Logging Table >> Error Log >> Select Error Detail >> 15 >> <F2>
Error Log >> Error Log Detail >> Error Detail of kV >>
Error : Read HW Values



EN_X_C is **off**. This confirms the relay contact malfunction.

The contact behavior should be monitored with an oscilloscope to check that the EN_X_C/ is present all the times EN_X/ command was given.

Ch 1 = EN_X/ at the generator backpanel test point EZX82 (+15VDC standby) against ground EZX87
Ch 2 = EN_X_C/ at the generator backpanel test point EZX76 (+5VDC standby) against ground EZX5/6
Trigger: Ch1 negative slope

To prevent stator overheating program
XRGSCOPE >> Program >> Tubes >> Tube Operating Modes >> rotation prolongation after prep: **enable**.
Then the anode will rotate for 30 seconds as long as no exposure was switched (not required for this test), PREP can be released as often as required.

The signal behavior should be identical to the following oscilloscope screenshots:

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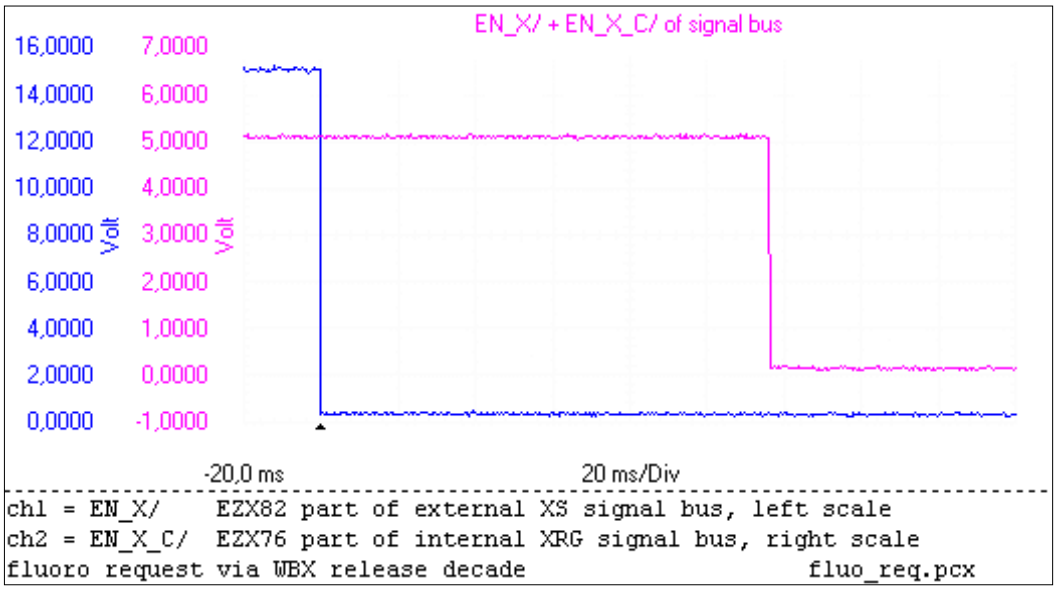
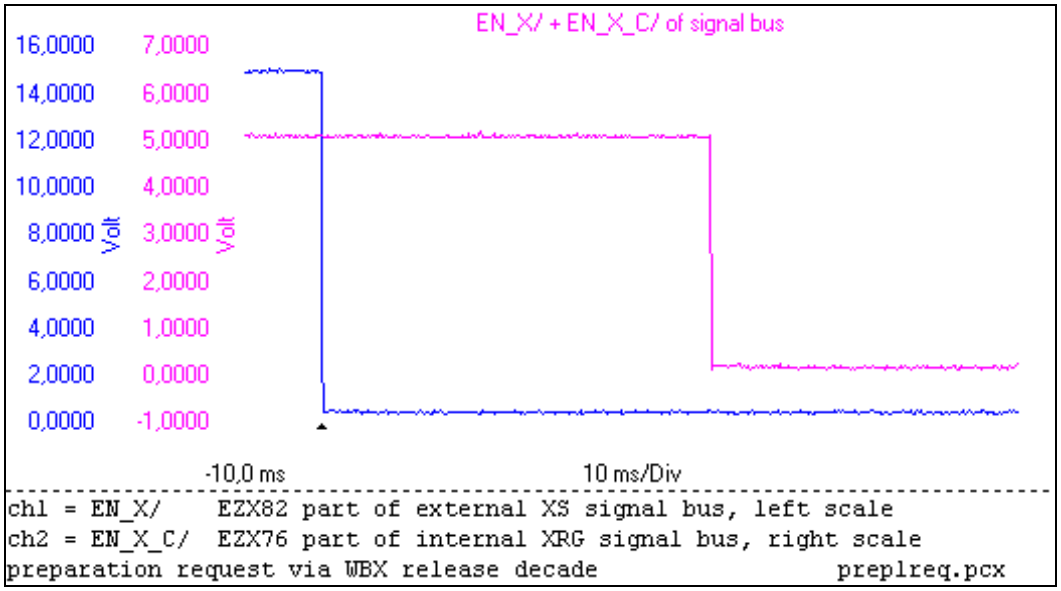
Fluoroscopy request via release decade adaptation unit WB



Preparation request via release decade adaptation unit 1WA, 2WA or 1WB



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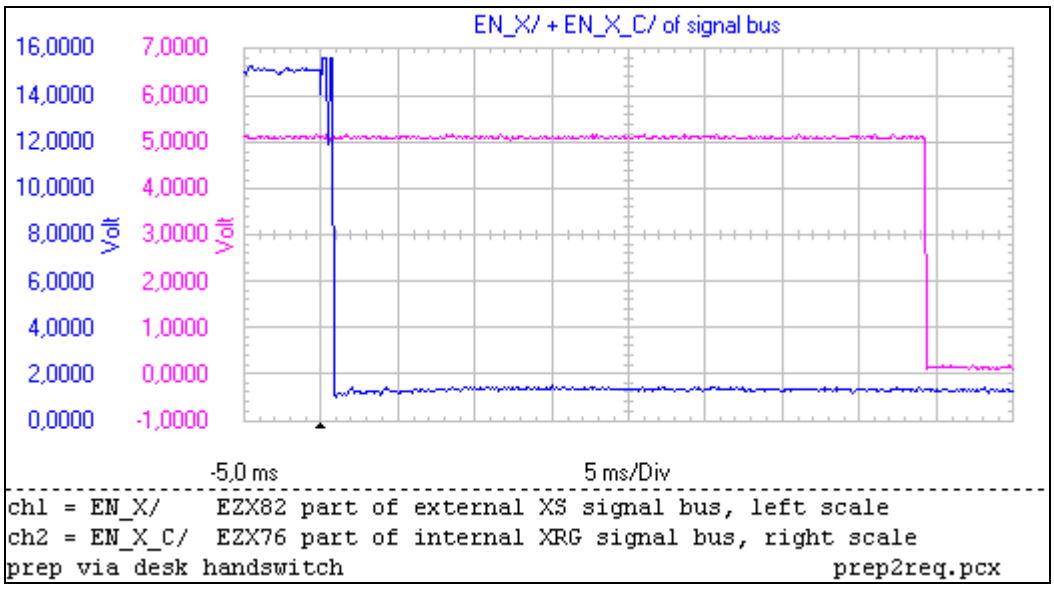
Preparation request via control desk handswitch



If the malfunction of the relay has been confirmed replace PCB CU EZ139.
Before doing so the CU Complete download has to be carried out (details see Service Manual).
Set the battery jumper of the new PCB CU to the **ON** position, then insert the new PCB.
Turn on the generator. Set XRGSCOPE >> Program >> **Date and Time**.
Reload the CU Complete data file. The generator should come up as before.

Check the EN_X/ - EN_X_C/ behavior with the new PCB.

PARTS DISPOSAL:

Since the CU PCB is a "EU" follow the PMS standard return procedure.

DOCUMENTATION:

File this FCO under Tab 8 "Service Information" in Service Manual OPTIMUS RAD or R/F or C

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